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SHOPPING PERCEPTIONS AND PREFERENCES:
A MULTIDIMENSIONAL ATTRACTIVENESS ANALYSIS
OF CONSUMER AND ENTREPRENEURIAL ATTITUDES

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Introduction

During the seventies there has been a growing effort to analyze behaviour in space through the identification of major determinants of individual spatial decisionmaking. As geographers and economists aim at developing a better understanding of the cornerstones and regularities in spatial behaviour, it is conceivable that there has been an increasing focus in the past decade on a disaggregate behavioural approach [5; 6; 16; 17; 50; 51; 60].

This development forms a sharp contrast with the past. The majority of traditional analyses has taken for granted that the functional and spatial separation of demand and supply caused among others by the Industrial Revolution could merely be analyzed in quantitative terms. Consequently, purely quantitative indicators such as prices, quantities and income played a major role in explaining consumer behaviour, while phenomena such as quality differences and product differentiation only played a minor role.

Since, however, in most advanced countries the basic needs are satisfied, higher order needs can be satisfied due to the large share of discretionary income [29; 38]. The period of 'fundamental scarcity' from the past is over [64] and the premise of product homogeneity in spatial choice theory gives an unsatisfactory explanation of (spatial) behaviour of both consumers and producers

[10; 11] . The higher-order needs (in a hierarchical Maslow sense) can only be adequately taken into account, if the behavioural postulates are not based on so-called objectively and quantitatively determined product abilities, but rather on socio-psychologically determined perceptions and preferences regarding attributes of commodities. Clearly, such socio-psychological perceptions may lead to a discrepancy between an a priori preferred set of commodities and a posteriori bought set of commodities [41; 42; 47].

There may as well be a discrepancy between the preferred set of demanded goods and the perceived set of supplied goods. In this respect, it is extremely important to know whether a socio-psychological equilibrium on the markets exists, viz. whether the perception of commodity attributes by the producer (supplier) is in agreement with the perception of those attributes by the consumer. In the case of a significant disequilibrium, a closer agreement may be achieved by the producer through a change of his 4p-policy (promotion, pricing, product, placing). The extent to which a producer changes his 4p-policy will depend inter alia on his preferences and aspirations (for example, according to principles of satisficing behaviour and bounded rationality [12; 55; 56; 62]), his behavioural environment (for example, his view on his market position [8; 18; 28; 52; 63]) etc.

Given the major importance of perceptions and preferences in shopping behaviour, classical shopping models normally fail to provide an adequate representation of the attractiveness of shopping centres or individual shops [58]. This paper

will be devoted to a multidimensional attractiveness analysis of consumer and producer perceptions and preferences in shopping attributes.

The paper is organized as follows. In the next section a fairly general methodology for individual consumer and entrepreneurial choice attitudes will be presented. Then a brief classification of current shopping models will be made. After a brief exposition of an integrated supply-demand framework for shopping behaviour, the particular attractiveness analysis used in this paper is set out in greater detail. Multidimensional scaling techniques are used as a central analytical tool. Next, an empirical application to a shopping centre analysis in The Netherlands will be presented.

General Methodology

Traditional micro-economic choice theory is based on a set of fairly stringent assumptions on individual behaviour and market form. It is often assumed that there is a level of utility (or sometimes want satisfaction) corresponding to each commodity, either at the moment of buying or at the moment of consuming. In general, utility functions are not equal for all individuals, so that a commodity with the same observable attributes or characteristics may provide a different utility for different persons. Consumer interactions such as bandwagon and Veblen effects are mostly neglected [35]. Utility derived from a commodity is neither stable over time, because a repeated consumption of the same commodity may result into a change in utility satisfaction (decreasing marginal utility; cf. the second law of Gossen). The above-mentioned remarks lead among others to the result that interpersonal utility comparisons are rejected in traditional micro-economic choice theory [19; 24].

The problem of complementarity of goods has only drawn a minor interest in the past. Complementary goods were assumed to alter the shape of the individual indifference curve, but these goods were only regarded as necessary by-products and not as equivalent main products. Consequently, no attention was paid to the transformation process of consumption, in which a multiplicity of goods may involve a multiplicity of attributes.

In modern micro-economic consumer theory [33; 34] it is assumed that this transformation process leads, for a given equal flow of inputs (such as commodities x_1, \dots, x_N), to an attribute set A_{i1}, \dots, A_{iN} , which is the same for all consumers $i(i=1, \dots, I)$ in an objective sense and which can be determined a priori. Given his priority structure, the consumer selects in a particular choice situation a subset of attributes a_{i1}, \dots, a_{iN} , and hence also a subset of inputs x_{i1}, \dots, x_{iN} .

A weaker point in the multi-attribute utility theory is the assumption of the same set of attributes for all consumers. In the more recently developed

psychometric (cognitive) model, however, the attributes may differ for each set of inputs: the specific mental process of a consumer determines his ultimate choice behaviour. Consequently, each subject has (subjectively) different sets of attributes which may differ according to both his particular perception and his preference structure regarding the attributes (see later).

Clearly, this assumption disturbs an objectively and quantitatively determined relationship between consumer utility and commodity attributes.

Therefore, we may conclude that the traditional emphasis on the quantitative allocation structure of consumer behaviour has neglected several important elements of consumer choice theory such as the cognitive perception (mainly related to the information about commodities) and the external impacts on or from an actual consumption pattern. Therefore, a more psychologically orientated explanation of economic choice behaviour of individuals has hardly received attention in micro-economic consumer analysis. The lack of operationality of some economic choice models may, therefore, be mainly due to its weak foundation [43]. Especially the increase of choice opportunities (due to the rise in discretionary income) requires a more behaviourally-orientated choice theory.

The remarks made thus far concerning traditional consumer theory apply equally as well to production theory. In fact, traditional production theory is suffering from the same weaknesses: production theory and consumer theory are isomorph. Traditional production theory is also a quantitatively-orientated analysis, in which investment and labour decisions are mainly determined by objective stimuli such as product prices, input costs and technical coefficients.

Producer perceptions of attributes of supplied products or of features of shops or shopping centres as well as producer preferences concerning several constituents of his supply behaviour are mainly neglected in traditional theory. Therefore, a more behaviourally-orientated analysis of producer behaviour (for example, entrepreneurs in the retail sector) may be extremely worth while.

The neo-classical equilibrium theory concerning the integration of consumer demand and producer supply was mainly based on an equilibrating price mechanism through which supply could be in harmony with demand. It is clear, that the introduction of consumer and producer perceptions and preferences of commodity attributes (in which not only the price plays a role) may affect the neo-classical equilibrium structure. Instead, more attention has to be devoted to an integration of equilibrating socio-psychological and economic-psychological processes.

In general, one may subdivide models for explaining choice behaviour at either the consumer or the producer side into 3 classes [59]:

- (deterministic or stochastic) models in which the functional relationships do not incorporate any psychological variable (as most traditional econometric

models do);

- (deterministic or stochastic) models which do take account of psychological variables through introducing dummy variables;
- integrated psychological-economic models which fully incorporate socio-psychological variables as important integrating factors. Such combined psychometric-econometric models, however, have hardly been developed thus far.

Consequently, the analysis of spatial choice attitudes can hardly be based on such models. This paper takes, therefore, a more modest position; it attempts to develop an integrating socio-psychological and economic framework for dealing with the attitudes of choice-makers (both consumers and entrepreneurs) in a spatial context (especially attitudes regarding shopping centres).

The main reason why traditional (behaviouristic) econometric choice models neglected socio-psychological factors is their (implicit) assumption of a revealed preference approach [17;47;53];

this approach takes for granted that decisions actually taken reflect the priority structure and the perception of decision-makers, so that there is no need to study socio-psychological and mental processes in an explicit way.

Instead of this revealed preference approach, a so-called direct preference approach which incorporates both individual preferences and perceptions of (potential) decision-makers is preferable [41; 42], since this approach reflects directly the individual preference and perception pattern.

Several authors have pointed out that not the observable and metric attributes of goods, shops or shopping centres explain the attitude and behaviour of both consumers and entrepreneurs, but rather their image regarding goods, shops or shopping centres [1; 2; 4; 14; 34;36; 45; 57]. This standpoint is in agreement with the above-mentioned direct preference approach, but it has to be admitted, however, that also the direct preference methods have limitations from a socio-psychological point of view: constraints in decision-making resulting from the (behaviour) environment are often left out of consideration and mental processes (learning processes, perception of information, future anticipations etc.) are hardly touched upon.

Clearly, the socio-psychological approach is not necessarily similar for all kinds of decisions regarding the sale or purchase of commodities (cf. the difference between convenience goods, shopping goods and durables, or the influence of time upon perception, preference and choice).

The various factors influencing the complex pattern of shopping decisions (consumers) and supply decisions (producers) are represented in an illustrative way in Fig. 1. The arrows linking the blocks reflect the main direction between the blocks. This illustrative pattern attempts to link together the constraints, the environment, the perception and the preferences of both producers and

consumers

entrepreneurs

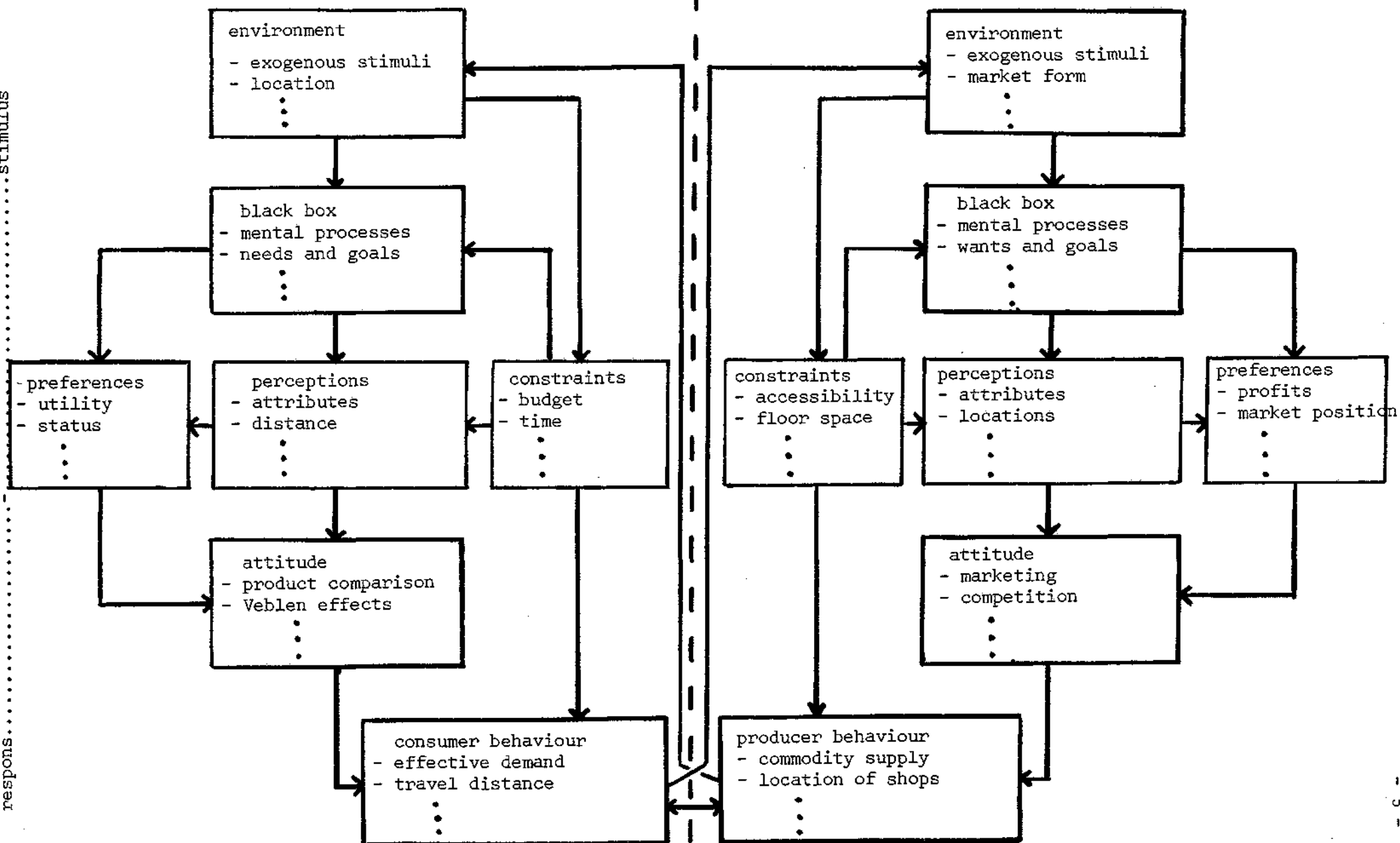


Fig. 1. An illustrative representation of factors determining consumer and producer attitudes and behaviour.

Shopping Models

Shopping models have already a long history in the analysis of consumer spatial decision-making. Similar to the subdivision of models of choice behaviour made in the preceding section, three types of shopping models can be observed: central place models, spatial interaction models and multivariate attitude models.

Central place theory provides a basis for the analysis of spatial hierarchical structures of shops and shopping centres [2; 7]. Important assumptions in this respect are: the homogeneity of customers, the uniformity of space and the distance-minimizing behaviour of customers. The hexagonal Christaller framework of regular market areas has attracted much attention from both geographers and planners. Geographers used this framework to test nomothetically-orientated assumptions about regularities in spatial structures and spatial behaviour in the retail sector, while planners employed it as a device for judging shopping facilities and for planning new shopping centres.

The attractiveness of shops or shopping centres in the central place approach can be measured in various ways, for example, retail floor space, a hierarchical choice probability index [50] or a clustered multi-component index.

Some weaknesses of the central place approach are: physical space is considered to be more important than space perception; the qualitative variety among shops or shopping centres is neglected; an equilibrium between supply and aggregate demand is assumed; multi-purpose trips are hardly taken into account; supply behaviour is hardly taken into account; the customer's image of a shopping centre is not necessarily in agreement with its observable features; the spatial shopping pattern is based on a static residential location pattern [2; 40].

Consequently, central place theory provides an analytical contribution to shopping models, which gives only insight into its regularity pattern. It does not touch upon the above-mentioned socio-psychological elements such as consumer perceptions and preferences (for some exceptions see [6; 26; 58]).

Spatial interaction theory has formed a second stream of models for shopping behaviour. Especially the gravity-type models have been used often [27; 49].

The distance toward a shop or shopping centre was a major component in these gravity shopping models, while also the size of a shopping centre (mass) played an important role. In addition to the size of a shopping centre, complementary attractiveness measures (see above) can be used as well.

A major advantage of the spatial interaction approach is that it leads to quantitative models which can rather easily be tested, while the data requirements are fairly low. Another advantage is that these models can easily be extended or adjusted [9; 15; 23; 30; 32; 37; 44; 54], for example, by introducing additional quality and attractiveness indicators, more flexible distance-friction functions (via the entropy theory), and intervening opportunities.

Some weaker points of the spatial interaction approach are: models are rather aggregate and do not describe or explain individual behaviour; space perception is left out of consideration; the attractiveness measures do not necessarily correspond to the shopper's perception and images of the centre; multi-purpose trips are often neglected; the entrepreneurial side is not integrated; the models do not explain the dynamics in the retail sector.

In conclusion, spatial interaction type of shopping models may provide an operational frame of reference for shopping behaviour, but it does normally not deal with individual human perceptions and preferences. Socio-psychological variables play only a role as a dummy variable in these kinds of models.

The final class of shopping models is the multivariate attitude approach. The multivariate attitude models take for granted that shopping attitudes and shopping behaviour can only be explained on the basis of a multi-dimensional set of explanatory variables, in which the customer's image of a shopping centre (determined by his preferences and perceptions) plays a significant role [5; 14; 31; 57] .

Such a multivariate analysis requires a disaggregated approach, among others by subdividing the consumers into homogeneous sub-classes, by subdividing the attractiveness of a shop or shopping centre into a set of relevant attributes and by analysing the individual perceptions and preferences of both consumers and entrepreneurs.

The shopping attitude analyses use several multivariate techniques such as factor analysis, personal construct theory [25] , semantic differential [39] and multi-dimensional scaling techniques [13; 58] .

The majority of these analyses are based on a multi-dimensional stimulus-response approach, in which perceptions, preferences and images play a dominant role. Another advantage of these kinds of models is that they are capable to deal with soft information (ordinal data, e.g.). This data limitation has often been neglected in the two above-mentioned classes of shopping models.

Clearly, these multivariate shopping models have also some limitations: the perception, preferences and images are normally based on a static view from the side of both consumers and entrepreneurs; multi-purpose trips are often overlooked; the predictive structure of these models is not always clear.

In conclusion, the multivariate attitude models provide a useful approach to the analysis of disaggregate spatial choice behaviour by dealing extensively with socio-psychological elements. (See also Fig. 1) They may also lead to an integration of consumer and entrepreneurial attitudes. Finally, it has to be noted that these multivariate models do not exclude the use of other models: when the perceived attractiveness of shopping centres has been identified by means of these techniques, the metric attractiveness measures can easily be incorporated in the two above-mentioned classes of models.

In the next sections our own approach will be exposed in greater detail.

Analytical Framework

In this section we shall present an integrated framework for the analysis of preferences and perceptions of distinct groups of consumers and producers with regard to goods or services bought (or to be bought) or sold (or to be sold) in a shopping centre. Due to lack of data and of an operational information system, this framework will be more simplified and stylized than that presented above, although both the demand side and the supply side will be considered.

An evaluation of the demand side of shopping behaviour may lead to useful information for at least 3 different groups: (i) consumer organisations which may attempt to influence consumer behaviour and to review critically the set of goods produced for the market at hand; (ii) the (local) government which may aim at planning a satisfactory level of shopping facilities (size, structure, location, e.g.); (iii) the entrepreneurs who want to employ appropriate marketing strategies and to take the right location decisions.

The entrepreneurial side can be analysed analogously, so that this information on the supply side may also be useful for the above-mentioned three groups. By confronting next demand and supply, one may identify possible discrepancies or overlaps in the shopping centre at hand.

Fig. 2 provides a brief systematic description of the above-mentioned integrated framework, where the variables used are

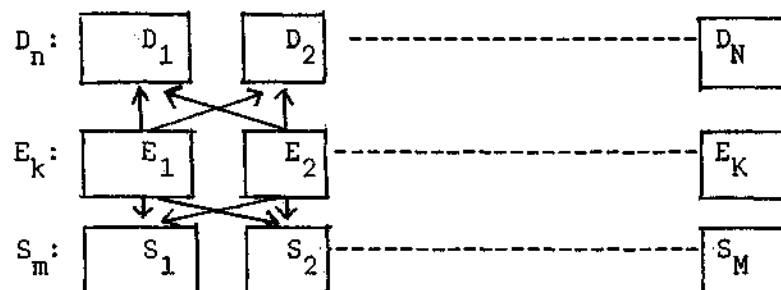


Fig. 2. Schematic relationship between the supply and demand side.

defined in the following way:

D_n = consumer decisions (individual or group)

S_m = entrepreneurial decisions (individual or group)

E_k = explanatory variable (direct or indirect) for both entrepreneurial and consumer decisions.

The arrows reflect functional-causal relationships which link the constituents of the general framework of Fig. 1 (such as perceptions and preferences regarding attributes) to the effective demand and supply.

The statistical and econometric analysis of the relationships and of the regularities in the data structure may be based on a wide variety of techniques such as principal component analysis, interdependence analysis, canonical correlation analysis, regression analysis, multidimensional scaling analysis, multivariate impact analysis etc., pending on the aim of the investigation at hand and on the quality and size of the data. Since in our analysis mainly soft information is being used, multidimensional scaling analysis will constitute one of the corner stones of the empirical application (see next section).

It should be noted that both Fig. 1 and Fig. 2 describe only static processes. From both an economic and a socio-psychological point of view it would be much more interesting to analyse dynamic processes in consumer and entrepreneurial attitudes, for example, changes in perceptions and preferences due to increases in discretionary income. Therefore, it would be ideal to construct a monitoring system in which entrepreneurial information (profits, market shares, shifts in marketing strategies or in priorities etc.) and consumer information (social status, growth in income and wealth, satisfaction level etc.) could be stored over a long range of periods. In that case, the interactions between consumer attitudes and entrepreneurial attitudes would become much more transparent

[16; 20] . Changes in consumer preferences or perceptions will alter their effective demand, so that entrepreneurs will react on this in a next period. Analogously, changes in entrepreneurial preferences or perceptions will modify their marketing policy, so that consumers will react in a subsequent period. In this respect, a Markov chain analysis might be very helpful, although the major obstacle to this approach is the lack of sufficient information. Therefore, in the present paper only a static approach will be dealt with.

A central element in this paper is the analysis of the attractiveness of shopping centres from both a consumer and an entrepreneurial point of view. Instead of using the retail floor space as a crude proxy for the attractiveness, a less metric approach based on perceptions and preferences will be employed. This will be further discussed in the next section.

Integrated Attractiveness Analysis

The integrated attractiveness analysis discussed in this section aims at combining and assessing the shopping images of both consumers and entrepreneurs regarding a given shopping centre. First, the elements of

the consumer analysis will be described and next those of the entrepreneurial analysis.

The consumer analysis is based on an individual approach to consumer perceptions and preferences. For each consumer considered in the analysis a set of personal attributes have to be identified and assessed, such as age, sex, average income, residential location, average expenditures to daily and non-daily commodities, frequency of going for shopping, modal choice, etc. These attributes allow us to aggregate consumers to various homogeneous subclasses.

The next step is the perception analysis. For a certain shopping centre to be studied a set of attributes is determined which represents part of the shopping centre's attractiveness. Thus, instead of using a unidimensional indicator (such as floor space), a multidimensional attractiveness profile is being used. The elements of this attractiveness profile (such as average price level, accessibility etc.) will be denoted x_1, \dots, x_K . The perceived attractiveness of a shopping centre has to be indicated by the customers themselves. Consequently, each customer interviewed in the shopping centre at hand has to rate the attributes x_1, \dots, x_K on an appropriate (ordinal) rating scale varying from very unsatisfactory to very satisfactory for each attribute. In this perception analysis a subdivision may be made into daily and non-daily goods, into car-users and non-car-users, into income and age categories etc.

Next, the preference analysis has to be carried out. This implies that customers of the shopping centre at hand have to rank the attributes x_1, \dots, x_K in order of their priority in determining to go for shopping in that shopping centre. These rankings are essentially ordinal weights. Thus, the consumer image of a shopping centre is determined by a combination of perceptions and preferences.

Sometimes, these ordinal ratings and rankings are multiplied in order to obtain a weighted aggregate attractiveness score for the shopping centre, but this mathematical score is not permitted and will not be employed here. Instead, a multidimensional scaling procedure will be used.

The entrepreneurial analysis proceeds in an analogous way. First, for each entrepreneur in the shopping centre concerned a set of individual characteristics were assembled, such as type of shop, floor space, property structure of the shop, average profits, annual sales, future prospects, liquidity position, competitive power, etc. This again allows an aggregation toward several homogeneous subgroups.

Next, the perception analysis of the attractiveness of the shopping centre has to deal with the same questions posed to the customers. Thus, this perception analysis provides information about the entrepreneur's image of the attractiveness of the attributes x_1, \dots, x_v perceived by

consumers and reflected in their shopping behaviour. Therefore, the same rating procedure can be employed.

The preference analysis is also similar to the consumer analysis, so that the entrepreneurs are asked to rank their priorities regarding the attributes x_1, \dots, x_K of the shopping centre.

The following step is the integration of the information gathered from a sample of consumers and producers. This analysis can be done in three ways: a separate consumer analysis (an attractiveness analysis which describes the consumer's images of the shopping centre as well as differences between groups of consumers), a separate entrepreneurial analysis (an attractiveness analysis which deals with the entrepreneur's views on the consumer's images of the shopping centre's attractiveness), and an integrated consumer-entrepreneurial analysis (an attractiveness analysis which uncovers the discrepancies between consumer and producer images of the qualities of a shopping centre).

Especially the last analysis is highly interesting from both an analytical and a planning point of view. A socio-psychological disequilibrium between demand and supply may lead to many frictions and failures in shopping centre policy (for examples, wrong investments per category of shops or unsatisfactory size or location of shopping centres).

A further analysis of the reasons of a disequilibrium (via an analysis of the discrepancies between attributes x_1, \dots, x_K) provides also the guidelines for improving the relationships between the demand and the supply side and hence for restoring a satisfactory economic basis of the shopping centre. This integrated analysis may also be important for a selective shopping policy of entrepreneurs who want to orientate their marketing strategies and commodity supply to certain subgroups of consumers. In the next section, these ideas will be illustrated by means of an empirical example.

There is still one problem left: the treatment of ordinal information on both perceptions and preferences. Apart from personal construct theory, especially multidimensional scaling techniques are the most appropriate tools to deal with an integrated analysis of ordinal perceptions and preferences of both consumers and entrepreneurs. These techniques are particularly important when ratings of perceptions or rankings of preferences are available, so that essentially non-metric information has to be dealt with.

Such non-metric information can be transformed into metric information of a lower dimensionality by means of multidimensional scaling methods especially developed in mathematical psychology (see for a survey among others [41; 43; 61]). These methods provide the tools to extract from individual preferences and perceptions

of spatial attractiveness items, a smaller set of quantitative (metric) attractiveness indicators.

The basic feature of these multidimensional scaling methods is that (dis)-similarities among attributes or items can normally only be ranked by individuals and groups in an ordinal sense. By employing a multidimensional scaling algorithm, a geometric representation of the position of the attributes or items as well as of the individuals or groups can be derived in a space of a given, but lower dimensionality. The representation of the originally ordinal data in a new geometric space with fewer dimensions implies that more ordinal conditions are available than geometric coordinates are necessary. Hence, the scaling methods use the degrees of freedom to transpose ordinal input data into metric output data. The coordinates of the positions of the attributes and of the judges are to be determined such that the interpoint distances between the points in a geometric space do not contradict the ordinal conditions implied by the input data. In other words, this monotonicity condition should guarantee a correspondence between the original (ordinal) (dis)-similarities and the Euclidean distances in a geometric space with a lower dimensionality. The mathematical technique itself will not be exposed here, but can be found in the references quoted above.

By means of these scaling methods, the relative differences in priorities for certain items or certain criteria can be assessed in a cardinal sense, so that the degree of mutual (dis)agreement in spatial perceptions and choices can be quantified. For example, assume an ordinal paired comparison table for N characteristic features of a certain shopping centre. This means that we have determined for these N objects $N(N-1)/2$ ordinal statements (or conditions). A representation of these N objects in, for instance, a two-dimensional Euclidean space requires only $2N$ numbers, viz. the Euclidean coordinates of N points in a two-dimensional space. Thus, the $N(N-1)/2$ ordinal relationships can be used to identify $2N$ cardinal numbers (see Fig. 3). Given the coordinates of the points in Fig. 3, metric statements about the cardinal differences between the successive attributes can be inferred.

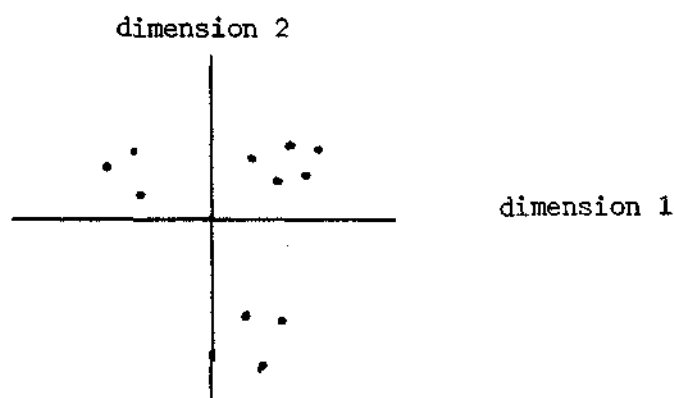


Fig. 3. Figurative representation of results of a scaling procedure in a two-dimensional space.

So it is clear that the major part of these scaling methods are based on a cognitive approach, in which individuals judge directly observable and mental stimuli with respect to differences between these stimuli on the basis of a set of attributes. These differences are mentally combined in some or other way (see the black box of Fig. 1) to make an overall judgement of similarities or preferences [21].

The following comments regarding the use of multidimensional scaling methods for perception and preference analysis can be made:

- A scientific analysis of mental images of attributes or objects is possible, because in this approach human mind is not a metaphysical concept [6; 22]. An interpersonal comparison of perceptions and preferences is possible as well (in contrast to the traditional view of [46]). In behaviourism, the assumption is made that the human mind is not independent, but that there is almost a tautology of mind and behaviour [6]. This methodological background is mainly dominating the revealed preference methods and, to a lesser extent, the (spatial) preference and perception methods. This implies that a behaviourist view of the world can only offer a partial explanation of spatial developments.
- The attributes or stimuli derive their relevance from their cognitive meaning and not in the first place from observable aspects, although Nijkamp and Van Veenendaal [42] have made an attempt to correlate perceived and/or preferred recreation items with observed characteristics of the items concerned on the basis of the assumption that there is an external world of spatial stimuli with objective properties outside human mind [46].
- Human mind differentiates between stimuli or attributes on the basis of a continuous reference pattern, while in fact discrete manifolds may be more appropriate [21]. Evidence also suggests that cognitive information is generally related to a limited range, context, or domain of stimuli. Clearly, this observation may hamper a straightforward comparison of totally different items.
- The perception and preferences are expressed in terms of differences between items by means of ordinal rankings. Consequently, the concept of distance (in a generalized Minkowski sense) plays a crucial role in these scaling techniques. This implies that instead of a utility framework a distance framework is used. This may lead to frictions in case of non-symmetrical psychological distances in all directions or in case of a double-peaked ideal reference pattern.
- Scaling techniques were originally not developed as tools to forecast spatial behaviour. They focussed mainly on cognition and on evaluation of spatial opportunities, so that perception and preference studies received most attention. By linking these studies, however, to observable features

of the items, they can in principle be used to predict future spatial processes.

Despite the above-mentioned limitations of perception and preference analyses by means of multidimensional scaling methods, in our opinion these techniques are a powerful tool to deal with spatial choice problems in the case of incomplete, ordinal or even fuzzy information. In the next section, the use of these techniques will be illustrated for an integrated supply-demand analysis of shopping attitudes.

Application

The multidimensional attractiveness approach described in the previous section has been applied to a combined preference-perception study of shopping attitudes regarding a shopping centre in a small Dutch town (Naaldwijk). The data for this study were collected by questionnaires, from both consumers and entrepreneurs. In addition to socio-economic characteristics of the interviewees, several questions regarding the attractiveness of the shopping centre concerned, were raised. Apart from a set of questions which were specific for both the consumers and the entrepreneurs, a set of joint questions was asked. Both the consumers and the entrepreneurs had to rate their perceptions of the same set of attributes of the shopping centre for both daily and non-daily goods. These attributes were: (i) the average relative price level of the shopping centre compared to competing shopping centres, (ii) the varieties of commodities at the shopping centre, (iii) the quality of the service at the shopping centre, (iv) the accessibility of the shopping centre, (v) the parking facilities, (vi) the atmosphere and the attendance of the shopping centre, (vii) the quantity and quality of complementary services at the shopping centre (such as post-offices, banks, libraries, medical services etc.), and (viii) the traffic safety for consumers. All these attributes had to be rated on an ordinal perception scale varying from 1 (good), 2 (satisfactory), 3 (less good), 4 (unsatisfactory) to 5 (bad).

In addition to a rating of perceptions both the consumers and the entrepreneurs had to rank their priorities for these items on an ordinal scale varying from 1 (most important attribute) to 8 (least important attribute).

Next, the above-mentioned multidimensional scaling techniques have been applied to the perception and preference scores of both consumers and entrepreneurs, for both daily and non-daily goods. The method used here is the so-called Minirsa-method developed by [48]. For the ease of presentation, the results of these scaling techniques are included separately in figures 4 - 11.

Fig. 4 reflects the two-dimensional configuration of the co-ordinates of the perceptions of 60 consumers regarding the attractiveness of the shopping centre for non-daily goods. It turns out that the perception of the attributes gives rise to 3 clusters of attributes (the perception of the average consumer is located in the origin of the axes). The first cluster includes items (i), (ii) and (iii). This cluster can be interpreted as the direct shopping centre attributes. The second cluster is composed of items (iv), (v) and (vii) and hence can be interpreted as the spatial attractiveness of the shopping centre. The last cluster composed of items (vi) and (viii) reflects the indirect qualitative attractiveness of the shopping centre. Given the fairly equal distribution of these 3 clusters around the origin (the perception of the average consumer), one may conclude that apart from items (v) and (vii) (parking facilities and complementary services) the attributes do not show exceptional negative perceptions among the consumers. The latter conclusion is confirmed by the configuration of the coordinates of the 60 consumers. A large number is located (as an average consumer) nearby the origin of the axes, while the remaining consumers show a rather equal and diffuse distribution around the axes. This implies that the consumer perception of the shopping centre with regard to non-daily goods is, on the average, rather satisfactory.

Fig. 5 represents the preferences of the consumers regarding the attributes of the shopping centre for non-daily goods. This preference pattern appears to be less diffuse: the consumers demonstrate a high degree of mutual agreement on the relative importance attached to the shopping centre attributes. It turns out that, on the average, a high priority is attached to the spatial attractiveness items (iv) and (vi) and to the direct shopping centre attributes (i)-(iii).

Given the position of the consumers in Fig. 5, one may derive the conclusion that even the majority of the consumers attaches the highest value to the direct shopping centre attributes. It has to be added, however, that also one fourth of the consumers considers parking facilities as rather important, although in the average preference pattern this item does not rank extremely high.

Fig. 4 and 5 give rise to the general conclusion that on the average the perception of the shopping facilities for non-daily goods is not unsatisfactory, although the preference pattern demonstrates clearly that a more preferred state of the shopping facilities might be obtained by improving the direct shopping centre attributes (price level, variety and quality of service) and the spatial attractiveness attributes (accessibility and atmosphere). This information is extremely useful for a public policy aiming at enhancing the attractiveness of the shopping centre. Further

policy conclusions, however, can only be inferred by taking into account the distributional aspects related to the perception and preference pattern. This requires a further subdivision of consumers into income, age and sex classes etc. Such information may also be used in planning adequate shopping facilities in new towns, given the demographic and social structure of the population. This will not be discussed in the framework of the present paper.

Next, the perceptions and preferences of entrepreneurs will be dealt with in greater detail. Fig. 6 represents the configuration of the perceptions of 24 entrepreneurs regarding the attributes of the shopping centre related to non-daily goods. It turns out that the direct attractiveness attributes (i) and (ii) (and to a lesser degree (iii)) are perceived quite well, whereas external conditions such as safety, parking facilities, accessibility and availability of complementary services are judged rather negatively. This implies in fact a negative evaluation of items which are not under the control of the entrepreneurs. The positions of the entrepreneurs themselves show a rather diffuse pattern which is caused by the diversity of the entrepreneurs (from different branches) in the shopping centre at hand.

The preference analysis of the entrepreneurs (see Fig. 7) leads to rather straightforward conclusions. A high priority is attached to items (ii), (iii), and (vi), while items (i) and (iv) receive an intermediate evaluation. Items (vii) and (viii) do not rank high on the priority list of the entrepreneurs.

By combining the entrepreneurial perceptions and preferences one may conclude that the entrepreneurs themselves may wish to improve the accessibility of the shopping centre by putting more emphasis on service (iii), accessibility (iv) and parking facilities (v). Clearly, this information may also be extremely important for local shopping centre policy, although it has to be added also here that a further division of entrepreneurs into homogeneous subclasses may reveal certain specific entrepreneurial desires.

The overall conclusion for the combined perception-preference analysis of both consumers and entrepreneurs is that the direct attractiveness items (i), (ii) and (iii) lead to contrasting judgements among consumers and entrepreneurs. Consumers appear to appreciate an improvement of these items, whereas entrepreneurs do not judge such an improvement very important (apart from item (iii)). In other words, the perception by the supply side leads to another image of the shopping centre than the perception by the demand side.

The spatial attractiveness items (iv), (v) and (vi) give to more agreement among consumers and entrepreneurs, except for the parking facilities.

The qualitative attractiveness items (vii) and (viii) also show a mutual agreement: both groups would appreciate an improvement of complementary services, but do not attach a high priority to a further increase of safety.

The same analysis can be repeated for daily goods. The perception of 60 consumers for daily good items is rather diffuse (see Fig. 8), but on the average the consumers appear to be rather unsatisfied with several attributes, except the variety (ii) and the accessibility (iii).

The preference pattern is rather clear (see Fig. 9). The majority of the consumers judge the direct attractiveness items (i), (ii) and (iii) and the atmosphere (vi) rather important, and to a lesser degree accessibility (iv) and safety (viii). In contrast to non-daily goods safety plays here a more important role, which may be caused by the frequency of purchasing daily goods.

The perception of 13 entrepreneurs for daily goods attributes shows again a diffuse pattern (see Fig. 10). The most satisfactory items appear to be service (iii) and parking (v). It should be noted, however, that this small sample may cause difficulties in reducing isotone areas into points.

The preference pattern of entrepreneurs is rather homogeneous and no clear priority structure can be identified (see Fig. 11). Given the configuration of the perceptions of entrepreneurs, one may conclude that on the average the entrepreneurs are rather satisfied with the attractiveness of the shopping centre concerned.

The final conclusion for daily goods characteristics is again a disagreement between consumers and entrepreneurs. While entrepreneurs are not satisfied with the attractiveness of the shopping centre for daily goods, the consumers would certainly appreciate an improvement of the direct attractiveness attributes and of safety.

Finally, a comparison between the daily and non-daily good attributes teaches that on the average the perception and preference pattern of consumers remains rather stable for both commodity categories, whereas the entrepreneurs have a different evaluation of the characteristics of the shopping centre for daily and non-daily goods.

Concluding Remarks

The previous integrated demand-supply analysis of the attractiveness of shopping centres has revealed several interesting phenomena. The image of a shopping centre may differ substantially between consumers and entrepreneurs, so that essentially a socio-psychological disequilibrium between demand and

supply may exist. Local shopping centre policy may attempt to bridge the gap between consumer and entrepreneurial images, in so far as the instruments of local policy may have an impact on the attributes of the shopping centre. On the other hand, this analysis also indicates that entrepreneurs may enhance the attractiveness of a shopping centre by improving the direct attractiveness attributes, even though they have the impression that these attributes are satisfactory. The consumer analysis clearly indicates that several items can be improved.

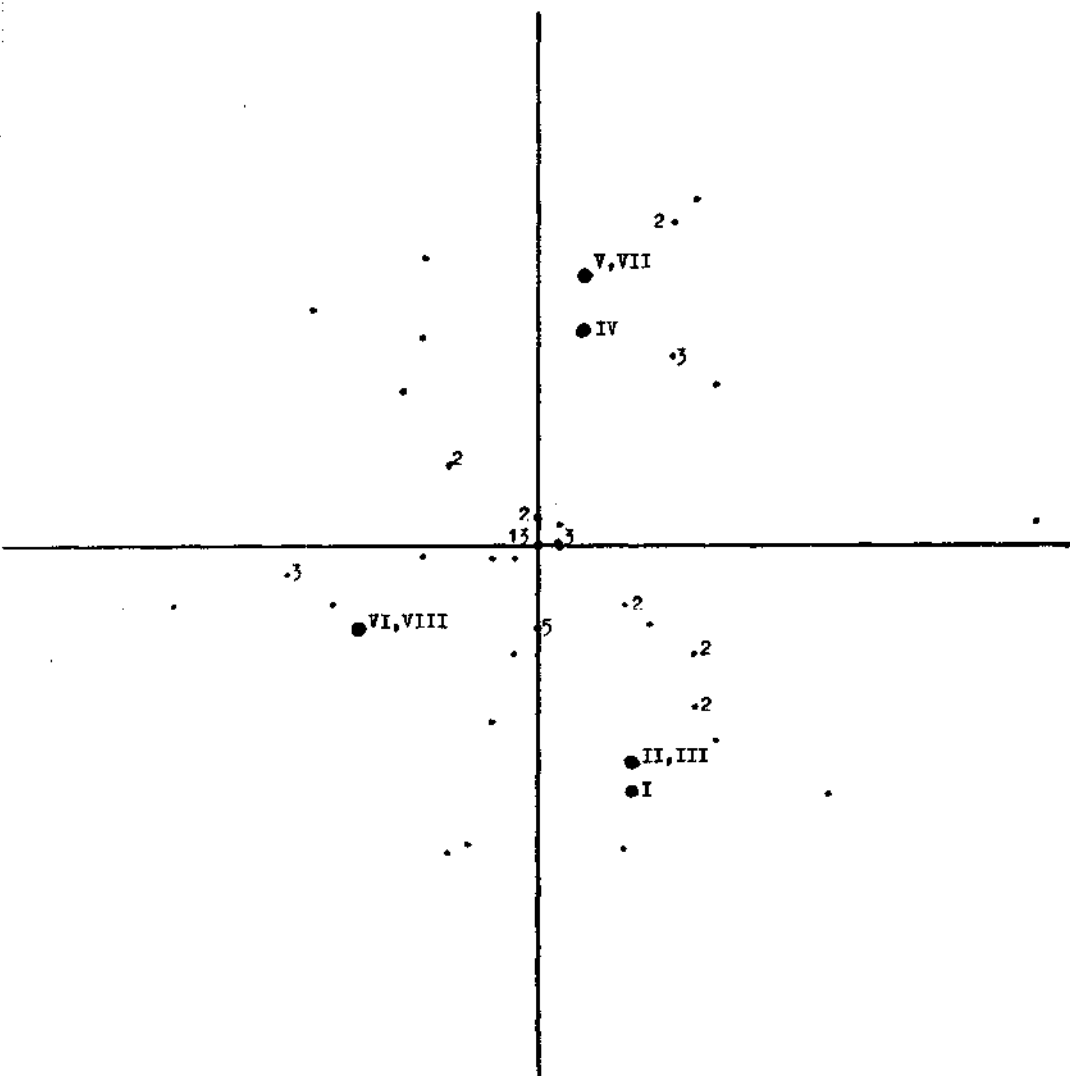


Fig. 4. The consumer perceptions of the attributes of non-daily goods.

N.B.: The large points are the attributes: I-VIII; the small points are the subjects. If more subjects are situated at the same point, the number of subjects is mentioned.

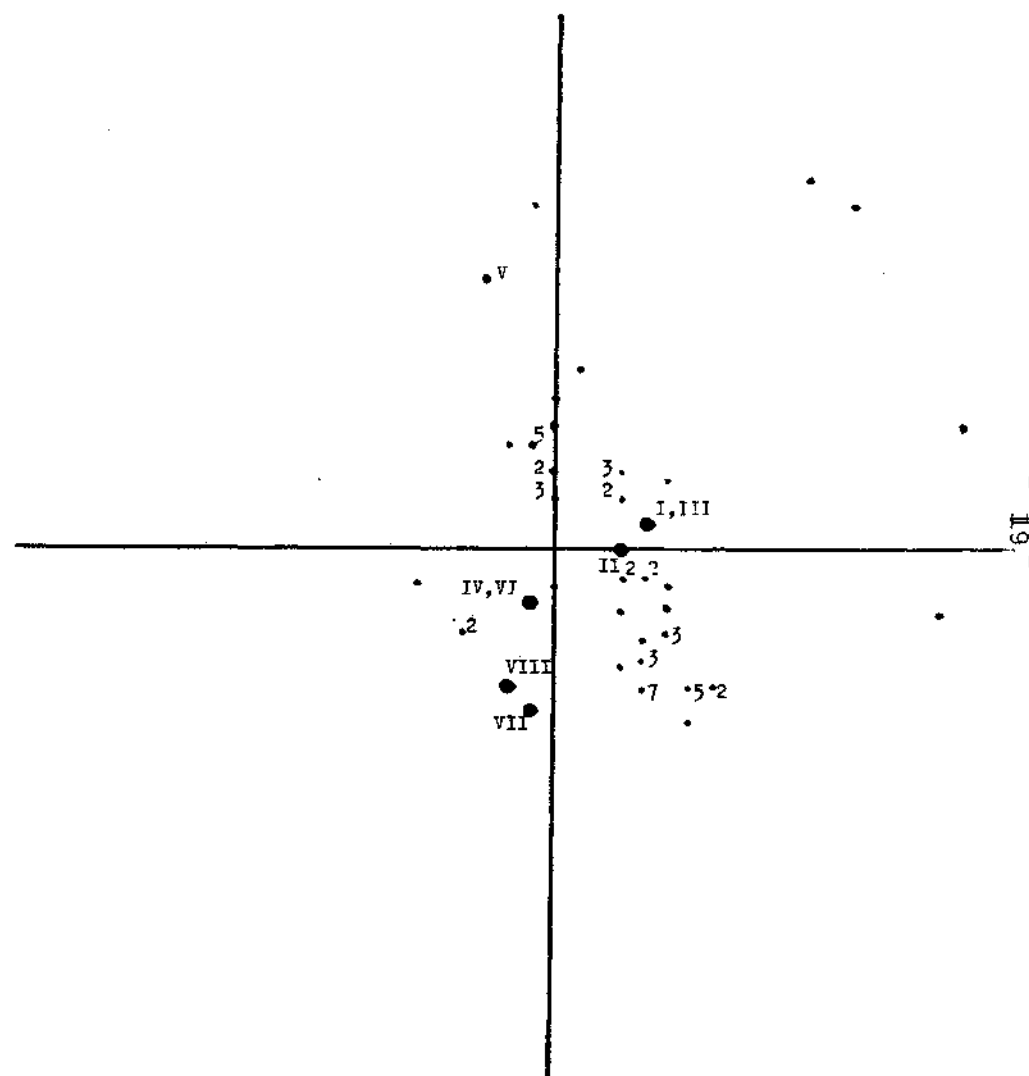


Fig. 5. The consumer preferences of the attributes of non-daily goods.

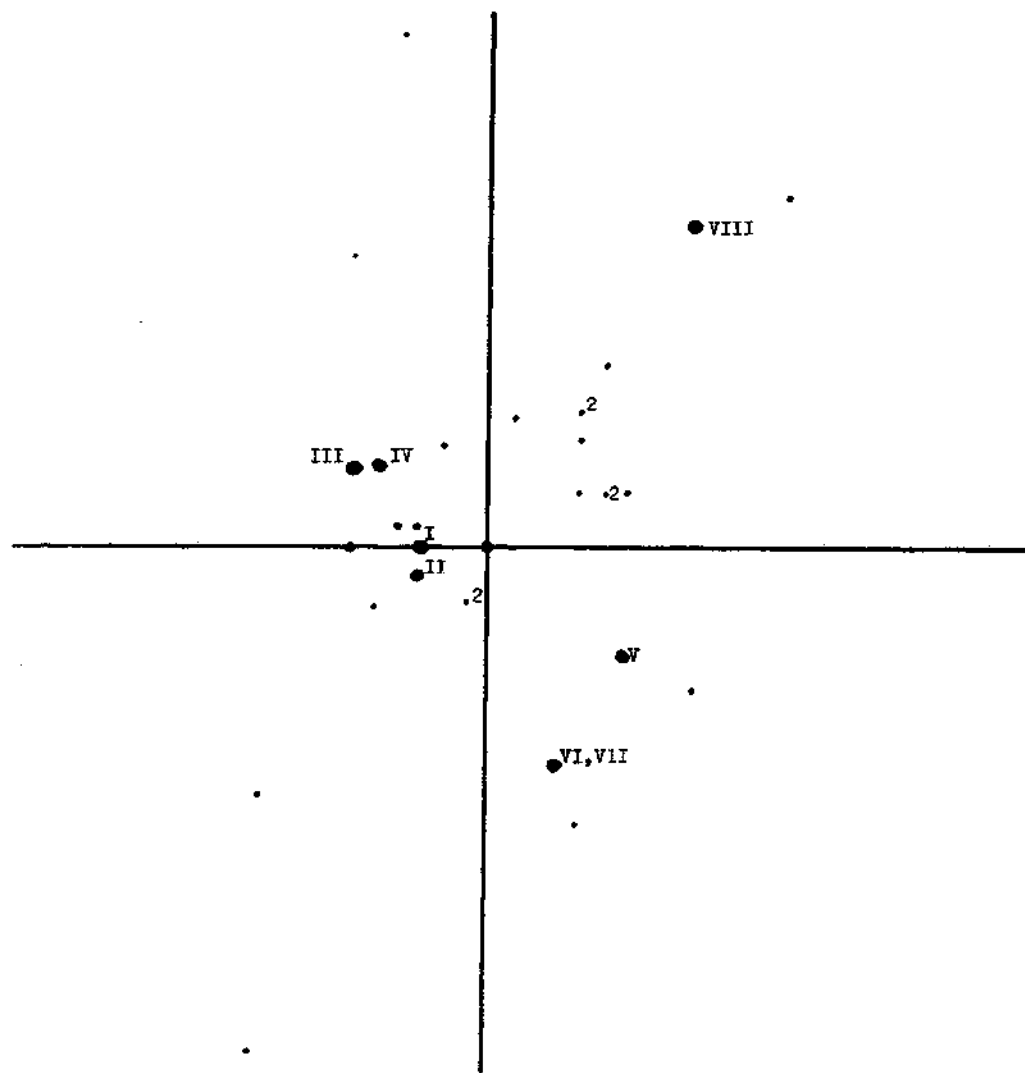


Fig. 6. The entrepreneurial perceptions of the attributes of non-daily goods.

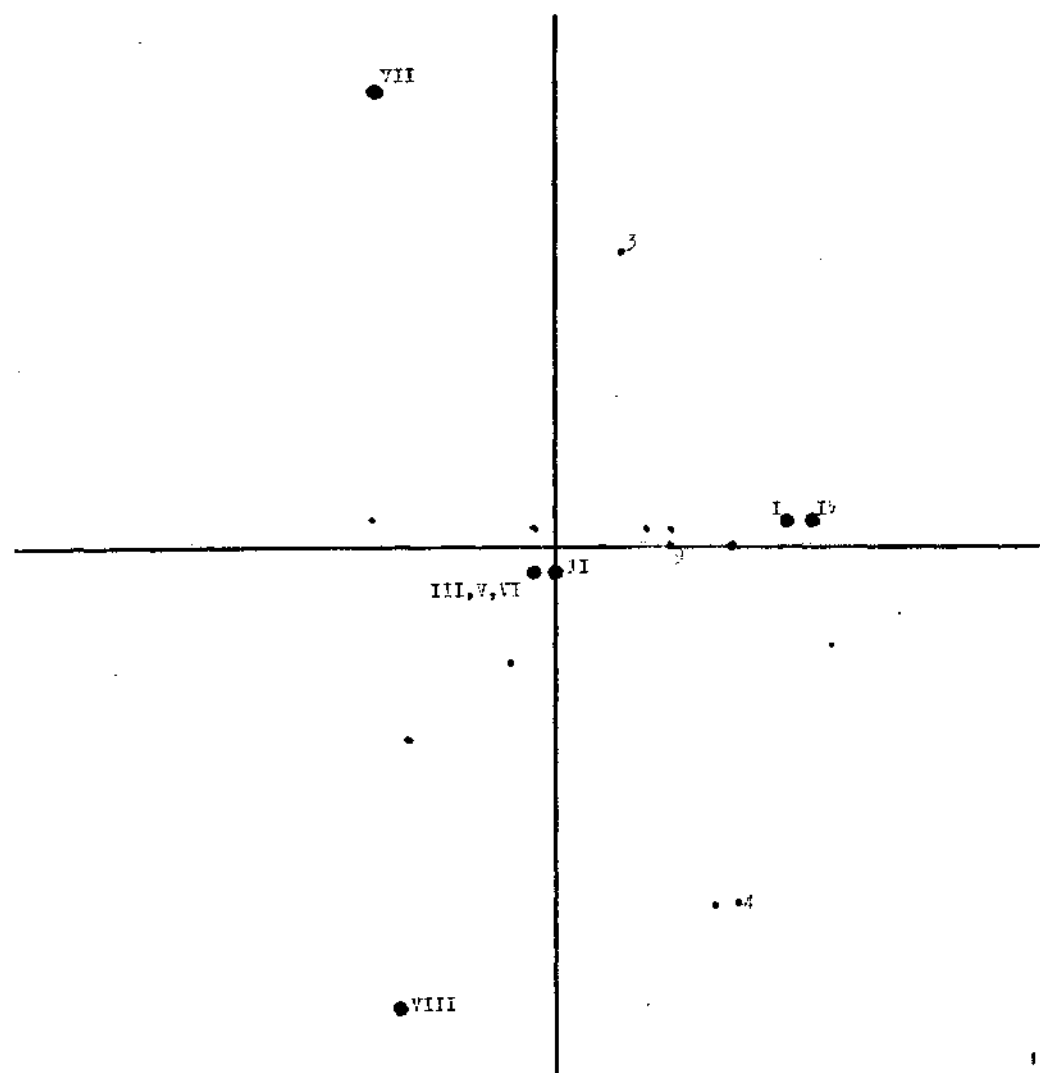


Fig. 7. The entrepreneurial preferences of the attributes of non-daily goods.

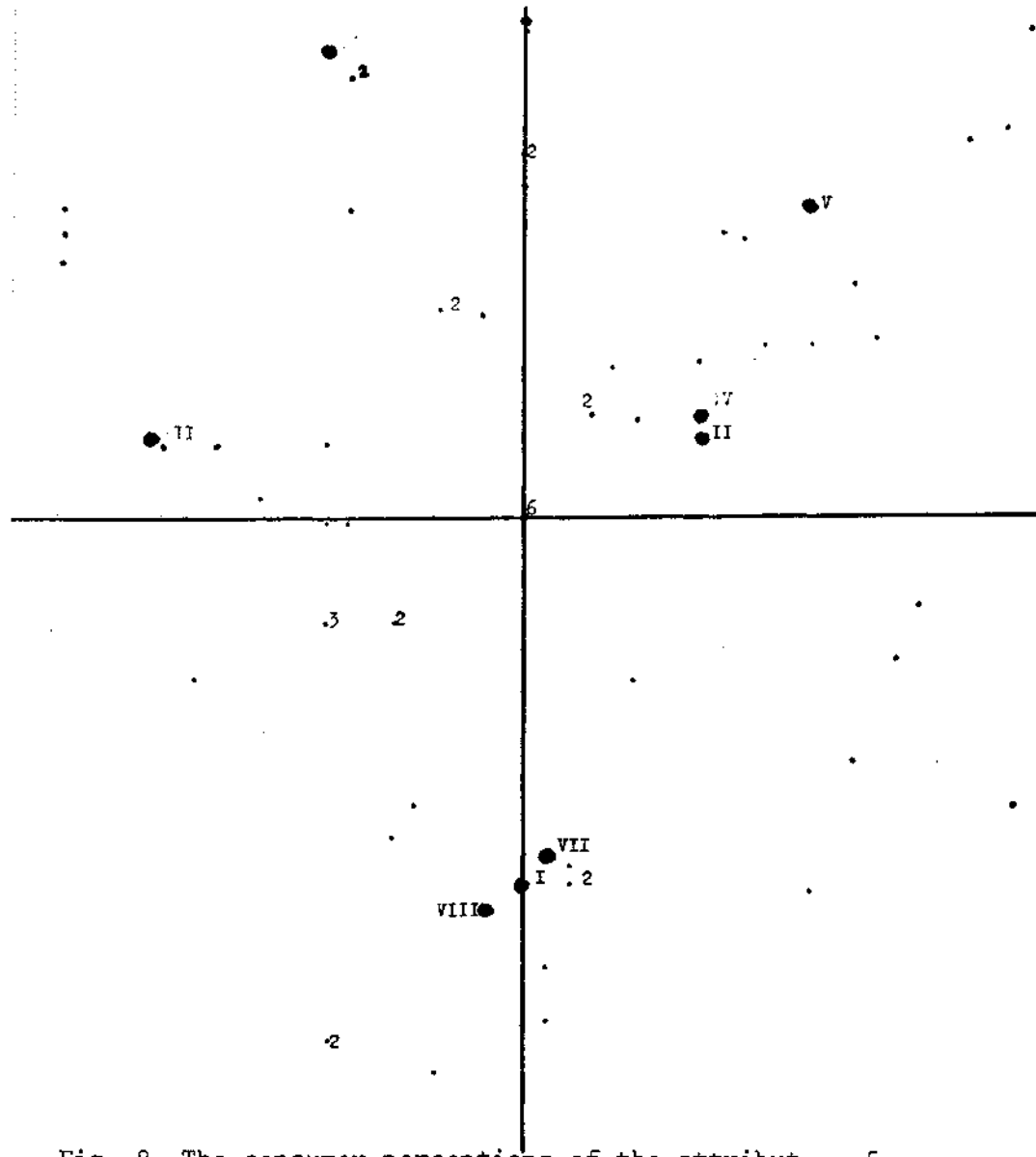


Fig. 8. The consumer perceptions of the attributes of non-daily goods.

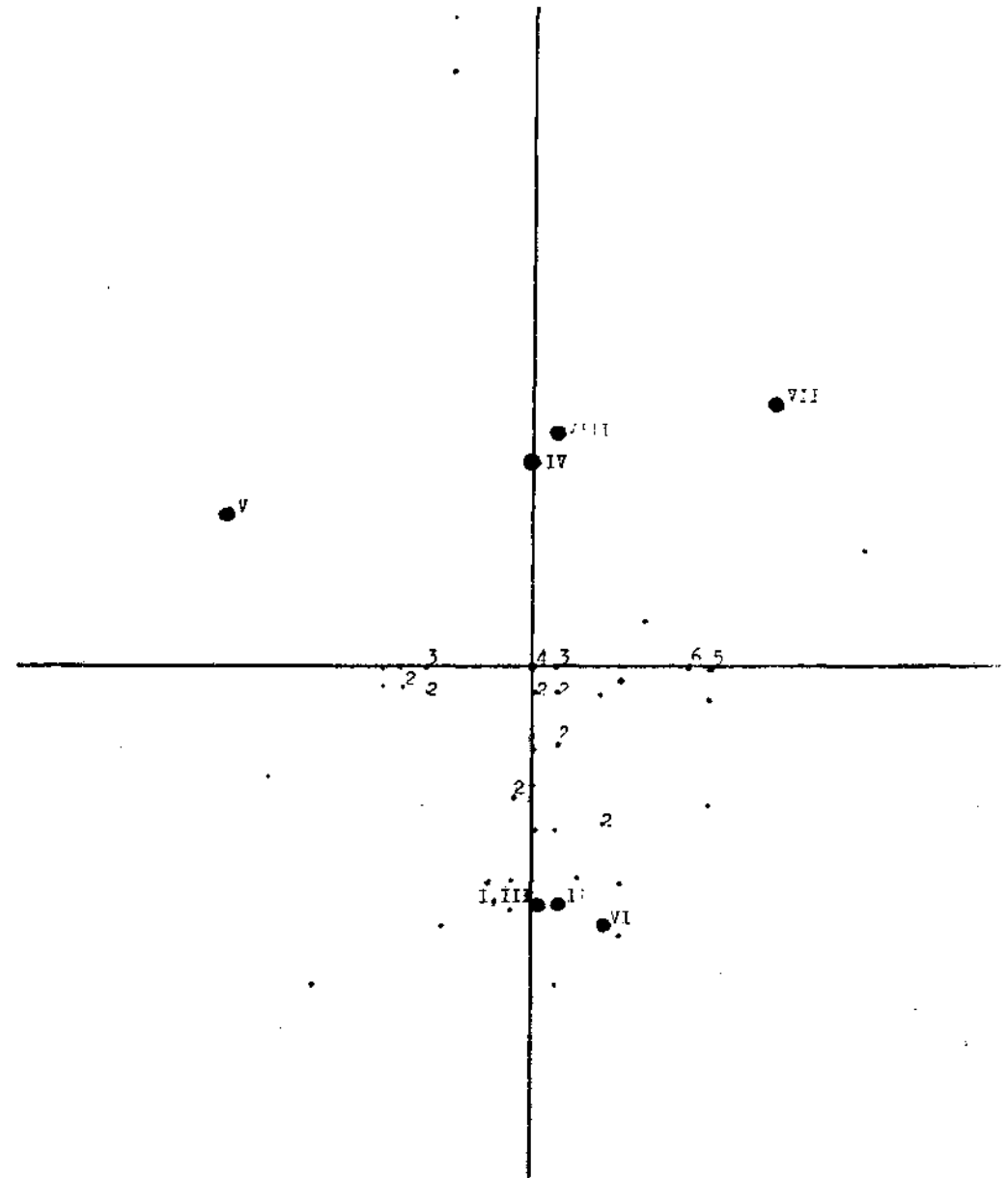


Fig. 9. The consumer preferences of the attributes of non-daily goods.

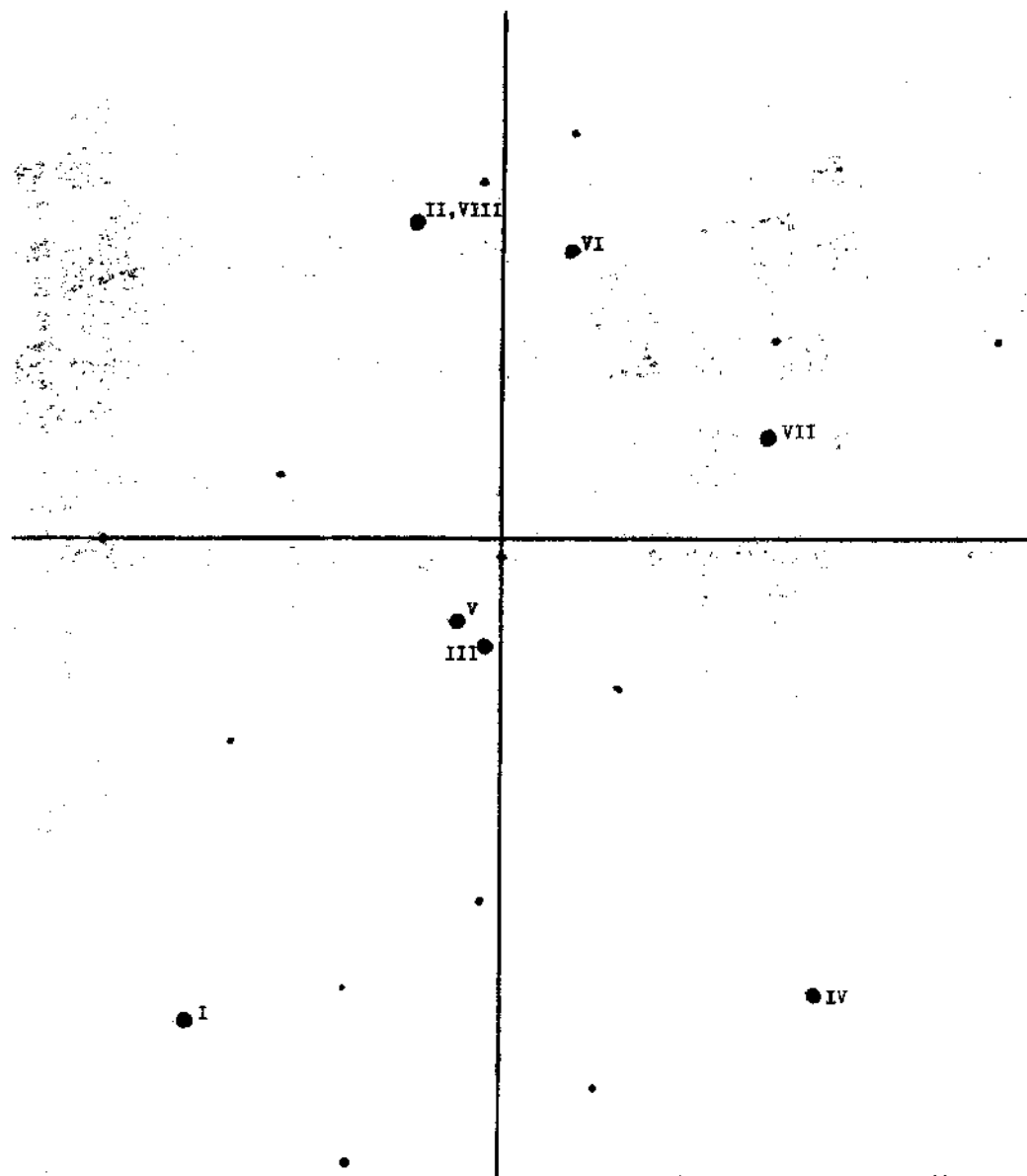


Fig. 10. The entrepreneurial perceptions of the attributes of non-daily goods.

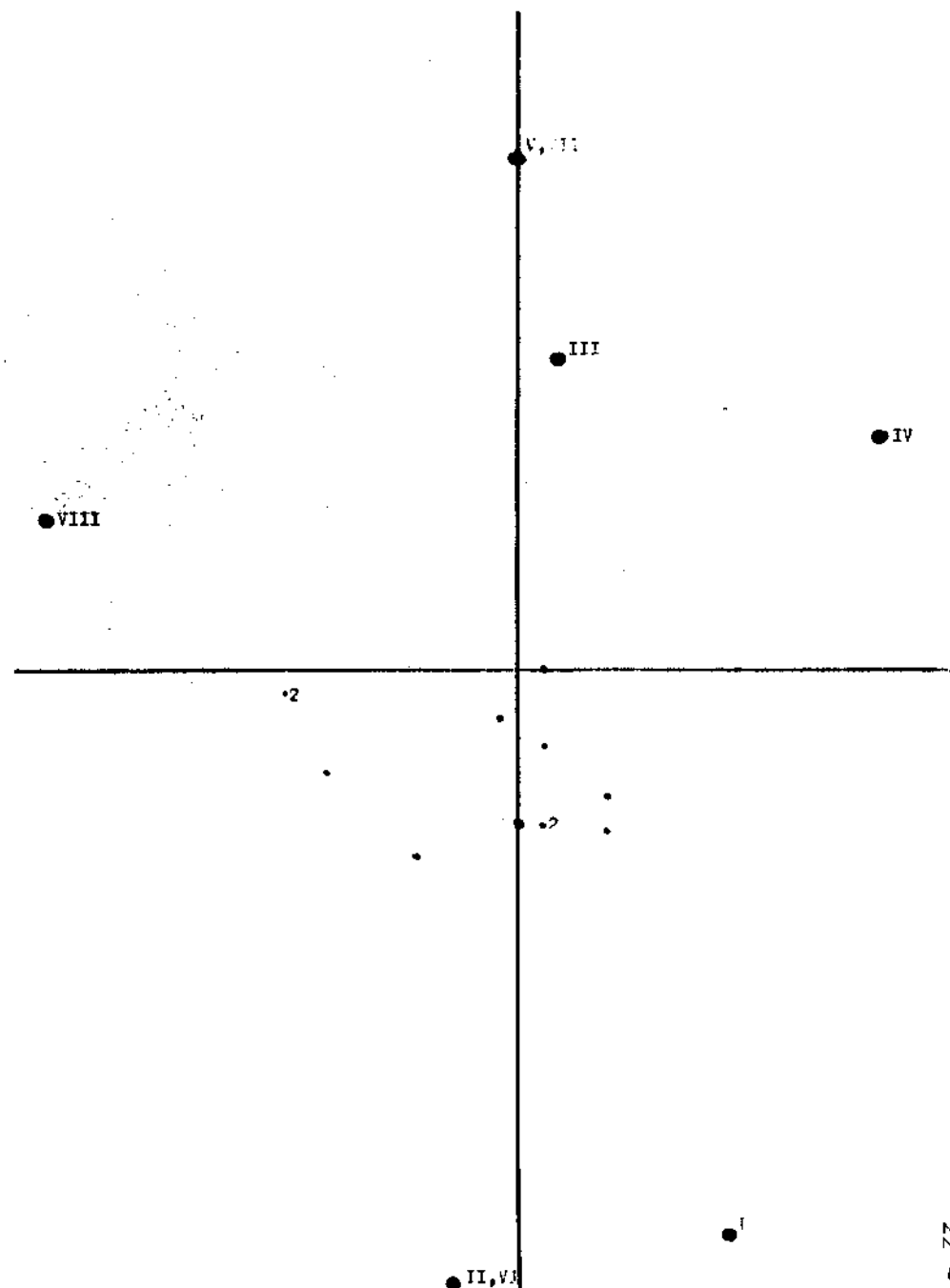


Fig. 11. The entrepreneurial preferences of the attributes of non-daily goods.

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